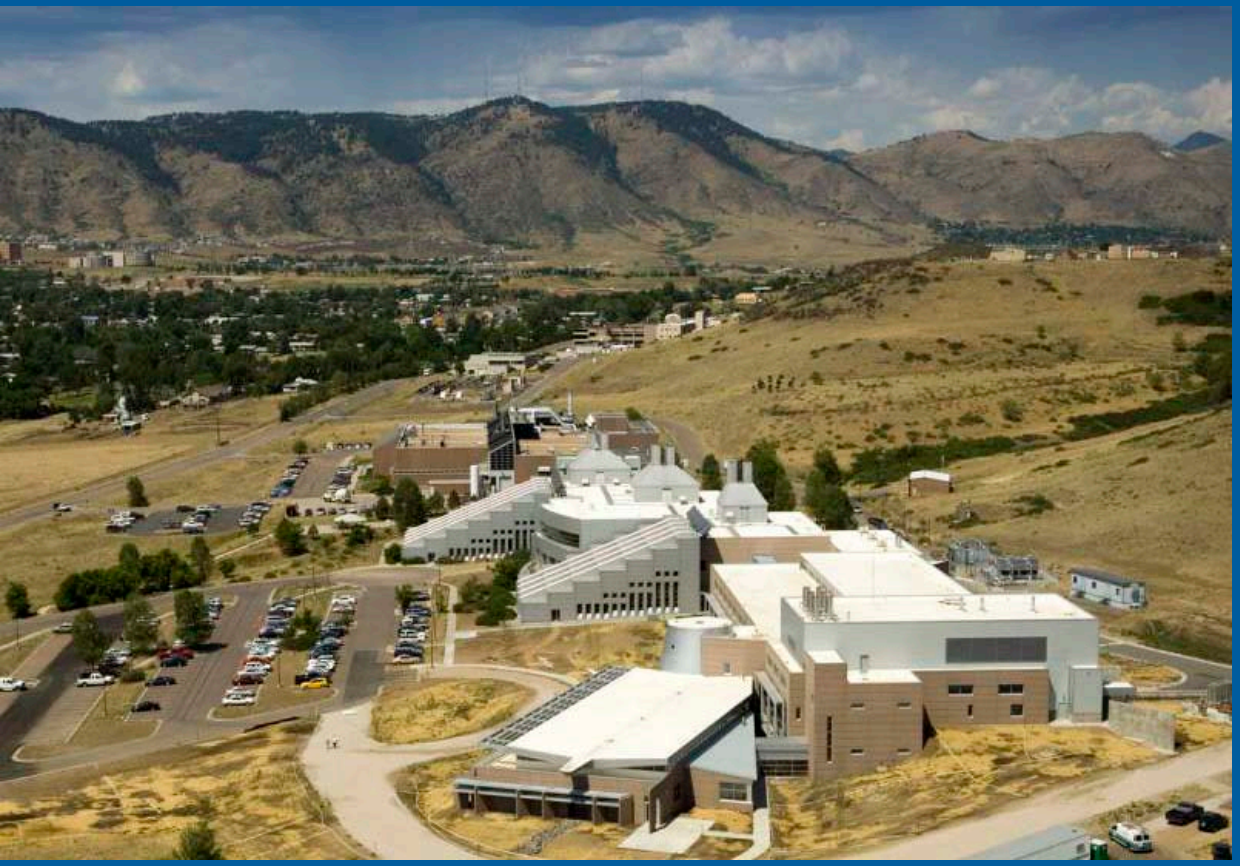
National Renewable Energy Laboratory
Innovation for Our Energy Future

Third-Party Financing and Power Purchase Agreements for Public Sector PV Projects



TAP Web Seminar

May 27th, 2009

Jason Coughlin

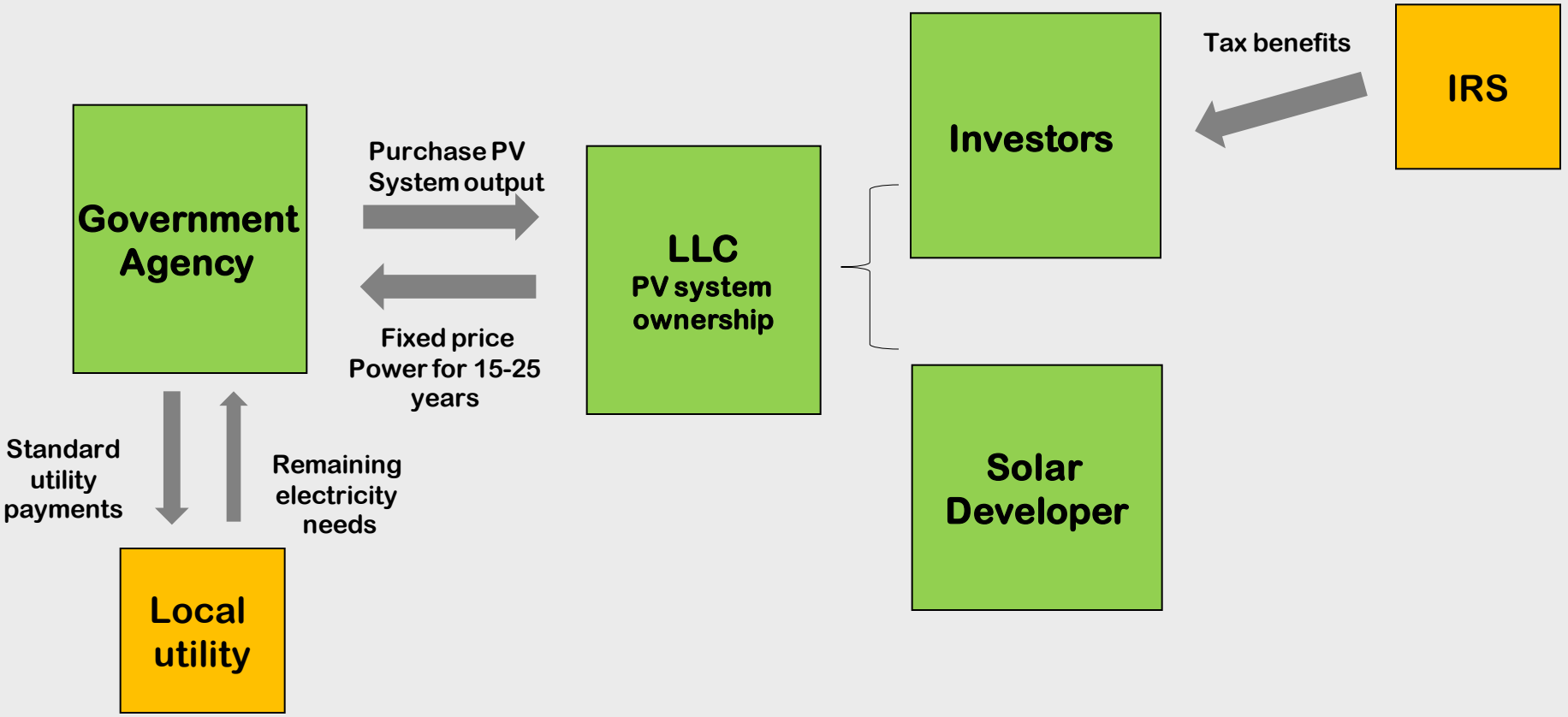
NREL is a national laboratory of the U.S. Department of Energy Office of Energy Efficiency and Renewable Energy operated by the Alliance for Sustainable Energy, LLC

Disclaimer

- The PPA is a very legally intensive process.
- Please consult your own legal counsel
- Each situation is different

Third Party PPA Structure

Instead of purchasing a PV system, a public entity agrees to **host** the system and **purchase** the electricity. The contract to purchase this electricity is often called the Power Purchase Agreement or PPA.



Caveat: This is just an example. Lots of different structures .

Who has signed PPAs?

- City of San Diego
- Denver International Airport
- Port of Oakland
- Fresno State University
- Fresno Yosemite Airport
- City of Tucson
- Boulder County
- City of Boulder, CO
- Various California School Districts
- City of San Francisco
- CalTrans
- City of Arvada, CO
- County of Broomfield, CO
- City of Rifle, CO
- Various California State University Campuses
- Chuckawalla Valley State Prison, CA
- Various California water districts
- Los Angeles MTA
- NREL
- Nellis Air Force Base
- Others….

Sources: websites of various solar developers, including; SunEdison, SolarPower Partners, Chevron Energy Services, Recurrent Energy Renewable Ventures, and SunPower.

Why enter into a PPA?

- Eliminate upfront capital cost
- Allows public entities to benefit from the tax credits
- Lock in long term, predictable electricity prices
- Transfers O&M to a third party
- Path to Ownership
- Various end of term options

500 kW system @ $3.5 to 4 million
Federal tax benefits ~ 55%

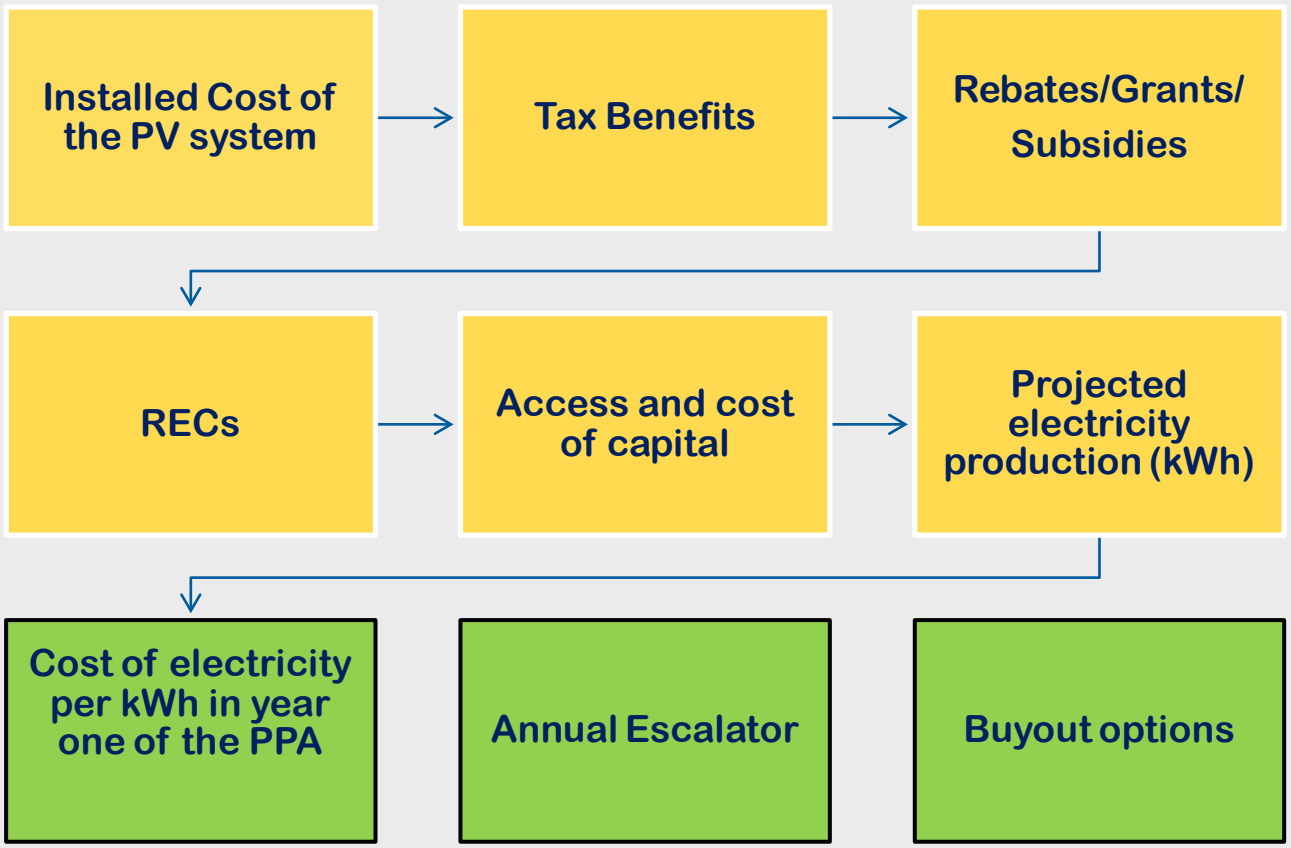
Some key elements of a PPA

- Price per kWh of electricity
- Annual escalation factor (2-5%)
- Length of the agreement (20-25 years)
- Purchase Options (starting in year 7)
- Termination options
- Many legal issues

Caveats of the PPA

- Not "free electricity"
  - Not necessarily cheaper than current utility prices at the outset
- Economics unlikely to work for small projects unless you bundle
- Financing is difficult these days. No guarantee you'll find interested counterparties or that counterparties can obtain financing.
- Environmental attributes (RECs) remain with the system owner
  - Green versus Brown Energy
  - Be careful what you say about the system
- 3rd Party Access to the property is necessary
- Transaction costs are high for all involved

Economics of a PPA



Economics of a PPA

PPA Proposal

Compared to the alternatives

Direct Purchase of the System

Status quo and continue to buy all electricity from local utility

What can happen at the end of the PPA?

Some additional things to think about

- Roof vs. Ground-mounted
  - roof system tends to be more expensive
- If roof system, what's the condition of the roof?
- If ground-mount system,
  - Environmental Impact issues
  - Soil Information
- Sizing the system
  - Net metering limits
- Easement/Lease Issues
  - any third parties that need to be involved?
- Interconnection Agreements
  - What is required by the utility?

Many legal issues and nuances

- Allocation of risk
  - Can't be a one sided transaction
- Appropriation clause
- Lost revenue issues
  - Shading
  - Removal of systems for repairs
- Tax recapture issues
- Indemnification issues
- Termination clauses
- Others….

The Process

- Site assessment
- Evaluate purchase versus third party finance model
- Develop and issue an RFP
- Managed bid process
- Select winner
- Negotiate contracts
- Manage the construction process
- Commission system

Contact Information:

303-384-7434
Jason.Coughlin@nrel.gov